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COMBAT ENGINEER INSTRUCTION COMPANY
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01 May 01
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STUDENT HANDOUT

WIRE OBSTACLES

1. PURPOSE: To provide the knowledge and skills necessary for constructing barbed wire entanglements to impede enemy mobility and to aid in channeling the enemy.

2. LEARNING OBJECTIVES:

a. TERMINAL LEARNING OBJECTIVE (S):

(1) Provided a mission, barbed wire, concertina, pickets, tools, and references, construct wire obstacles to tie into existing natural or other manmade obstacles so enemy movement/maneuvers are fixed, turned, blocked, or disrupted as required by the mission while observing safety precautions per the references. (1371.03.01)

b. ENABLING LEARNING OBJECTIVE (S):

(1) Without the aid of references, given a countermobility mission, explain, in writing, the principles of employment for wire obstacles per the references. (1371.03.01a)

(2) Without the aid of references, given a countermobility mission, involving wire obstacles, state, in writing, the six types of wire obstacles per the references. (1371.03.01b)

(3) Without the aid of references, given a countermobility mission involving wire obstacles, state, in writing, the classification of wire obstacles per the references. (1371.03.01c)

(4) Without the aid of references, given a scenario involving a double apron fence, determine, in writing, picket spacing per the references. (1371.03.01d)

(5) Without the aid of references, given a scenario involving a double apron fence, list, in writing, the sequence for fastening barbed wire to pickets per the references. (1371.03.01e)

(6) Without the aid of references, given a scenario involving triple standard concertina fence, determine, in writing, picket spacing per the references. (1371.03.01F)

(7) Without the aid of references, given a scenario involving triple standard concertina fence and a notional platoon, determine, in writing, the amount of time required to erect the obstacle per the references. (1371.03.01g)

(8) Without the aid of references, given a scenario involving triple standard concertina fence, list, in writing, the sequence for installing concertinas on pickets per the references. (1371.03.01h)

(9) Without the aid of references, given a scenario involving a triple standard concertina fence, state, in writing, the procedure for tying the top row of concertina per the references. (1371.03.01i)

(10) Without the aid of references, state, in writing, the purpose of a knife rest per the references. (1371.03.01j)

(11) Without the aid of references, state, in writing, the minimum depth of a concertina roadblock per the references. (1371.03.01k)

(12) Without the aid of references, state, in writing, the picket spacing of a four strand cattle fence per the references. (1371.03.01l)

(13) Without the aid of references, provided a mission, barbed wire, pickets, tools and gauntlets, as a member of a crew, construct a double apron fence to tie into existing natural or other man-made obstacles so enemy movement/maneuvers are fixed, turned, blocked or disrupted as required by the mission, while observing safety precautions per the references. (1371.03.01m)

(14) Without the aid of references, provided a mission, concertina wire, barbed wire, pickets, tools and gauntlets, as a member of a crew, construct a triple standard concertina fence to tie into existing natural or other man-made obstacles so enemy movement/maneuvers are fixed, turned, blocked or disrupted as required by the mission, while observing safety precautions per the references. (1371.03.01n)

BODY

3. TYPES: There are several types of wire obstacles:

a. Double Apron Fence.

b. Four Strand Cattle Fence

c. Triple Standard Concertina.

d. Tangle Foot.

e. Knife Rest.

f. Concertina Roadblock.

g. The Double apron fence and the triple concertina fence are the most commonly constructed wire obstacles.

4. CLASSIFICATIONS: All obstacles are classified in two broad categories **Existing and Reinforcing**. Existing obstacles are Natural such as Lakes, Rivers, and Mountains or Cultural, meaning Towns, Railroad embankments, etc.. Reinforcing obstacles are placed on the battlefield to strengthen existing obstacles. Reinforcing obstacles include but are not limited to minefields, road craters, log and wire obstacles.

5. PRINCIPLES OF EMPLOYMENT: In order to be effective, wire obstacles should be:

a. Under friendly observation and covered by fire.

b. Protected by antipersonnel mines, and warning devices.

c. Concealed from enemy observation by incorporating terrain features such as reverse slopes, hedges, woods, and fence lines.

d. Erected in irregular traces.

e. Employed in depth.

f. Coordinated with other elements of the defense.

g. Tied in with other man made or natural obstacles.

h. Provided with lanes and gaps.

i. Of no advantage to the enemy.

6. CONSTRUCTING THE DOUBLE APRON FENCE:

a. Two types of double apron fence:

(1) 4 and 2 pace

(2) 6 and 3 pace

(3) The type of fence used will depend on the Materials you have available, the distance to be covered, and the time you have to complete the obstacle.

b. Operational-Layout and installation of pickets is to be completed with 3 squads.

(1) First crew lays out long pickets.

(2) Second crew lays out short pickets.

(3) Third crew installs pickets. All long pickets will be installed using a u-shaped picket driver. Short pickets will be installed using a sledgehammer.

(4) Erect from right to left as you face the enemy. Always work from friendly side.

(5) Long pickets are 4 paces apart on centerline.

(6) Short pickets are centered between long pickets and two paces off of centerline. Place your back against the first long picket and walk 2 paces on centerline. Next, mark the deck so you know where the center is between long pickets. Then, take 2 paces to the left and to the right to get the exact location of short pickets.

(7) End anchor pickets are 4 paces from the first and last long picket.

c. Operational layout and installation of wire (men are organized into two crews of four men each). Before handling any type of wire, barbed wire gauntlets must be used. A picket tie will occur whenever a barbed wire line crosses a picket.

(1) First wire, enemy diagonal.

(2) Second wire, enemy trip wire.

(3) Third wire, enemy lower apron.

(4) Fourth wire, enemy upper apron.

(5) Fifth wire, lower cattle fence wire (Install from the bottom up).

(6) Sixth and seventh wires, center cattle fence wires.

(8) Eighth wire, top cattle fence wire.

(9) Ninth wire, friendly diagonal wire.

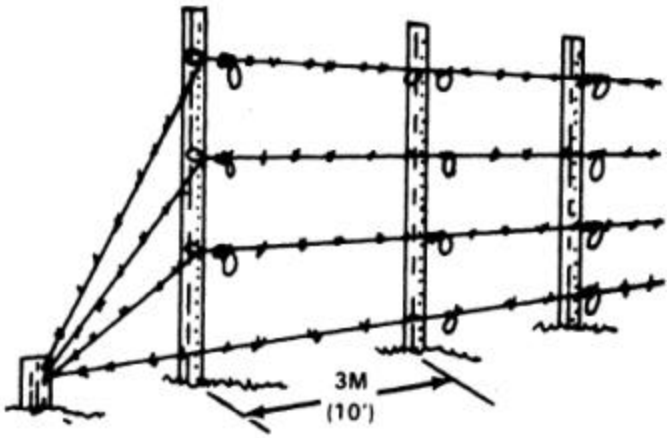
(10) Tenth wire, friendly upper apron wire.

(11) Eleventh wire, friendly lower apron wire.

(12) Twelfth wire, friendly trip wire.

d. DOUBLE APRON FENCE 6 AND 3 PACE: Erected in the same manner as the 4 and 2 pace. However, the pace count will change by substituting 6 paces instead of 4 and 3 paces instead of 2.

7. FOUR-STRAND CATTLE FENCE: The four-strand cattle fence is used in the center of a double apron fence. The four-strand cattle fence can also be used by itself, usually in administrative areas.



a. Construction.

(1) Eight men may be employed on short sections of this fence and up to 16 men on 300 meter (984 ft) sections. The two operations are laying out and installing pickets and installing wire.

a First operation. The working party is divided into two groups of approximately equal size. The first group carries and lays out long pickets at 3 meter (10 ft) intervals along the centerline of the fence, beginning and ending the section with an anchor picket and including anchor pickets for guys if needed. The second group installs the pickets.

b Second operation. As the first task is completed, men move individually to the head of the fence and are organized into teams of two or four men to install wires. For four man teams, two men carry the reel and two men make ties and pull the wire tight. For two man teams, the wire must first be unrolled for 50 to 100 meters (164 to 328 ft), then the men come back to the head of the work and make the ties, or the wire may first be made up into bobbins to be carried and unwound by one man while the other man makes the ties. The first team installs the bottom fence wire, and draws it tight and close to the ground. Succeeding teams install the next wires in order.

8. TRIPLE STANDARD CONCERTINA: This fence consists of two lines of concertina serving as a base, with a third line resting on top. All lines are installed with staggered joints. Each line is completed before the next is started so that a partially completed concertina entanglement presents some obstruction. It is erected quickly and is difficult to cross, cut, and crawl through.

a. Space pickets as follows: Erect from right to left as you face the enemy. Again work from friendly side.

(1) Long pickets are 5 paces apart.

(2) Anchor pickets are placed 2 paces from each end of the long pickets.

(3) Enemy and friendly rows of pickets are 3 ft apart.

(4) Friendly picket row is offset from enemy row.

b. Construction procedure-triple standard.

(1) First Operation (3 crews).

(a) First crew lays out all pickets.

(b) Second crew installs all pickets.

(c) Third crew lays out all concertinas.

(d) Lay one concertina in front of third picket on enemy side.

(e) Lay two concertinas to rear of third picket on enemy side.

(f) Remove binding wire and place on handles.

(g) Repeat same performance every fourth picket thereafter.

(2) Second Operation (all personnel). Install front row concertina and horizontal wire.

(a) Drop concertinas over enemy side pickets. Join concertinas together using staples or barbed wire ties.

(b) Install horizontal wire across the enemy side row of concertina securing with either staples or barbed wire ties, two to three times between each picket.

(c) Install rear row concertina and horizontal wire as you did the first row.

(d) Install top row concertina and tack or tie to the rear horizontal wire. two to three times between each picket.

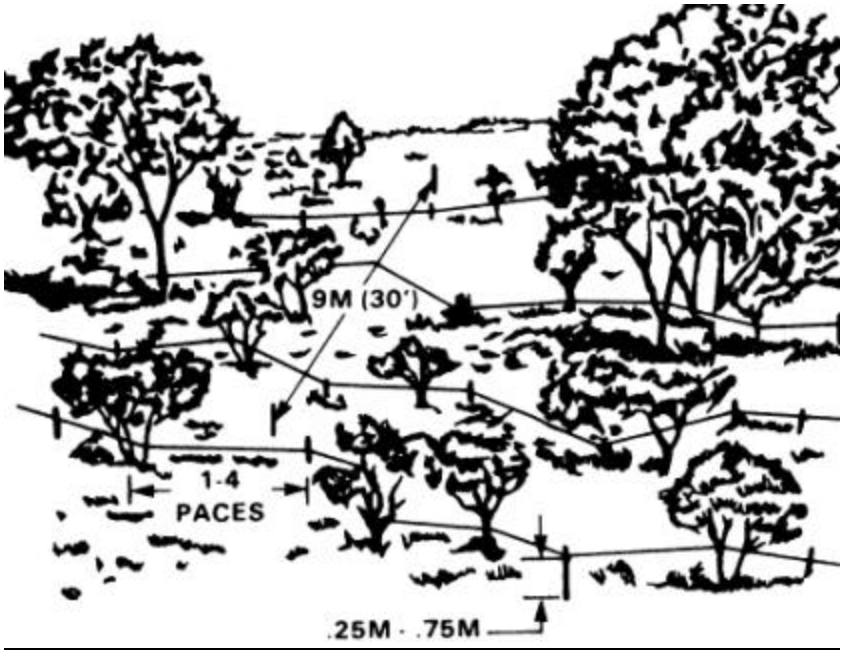
(3) A 300- meter fence is a platoon task normally requiring 1-hour to complete.

9. TANGLEFOOT: Tangle foot is used where concealment is essential and to prevent the enemy from crawling between fences and in front of emplacements.

a. Tangle foot should be employed in a minimum depth of 9 meters (30ft).

b. Short pickets will be used and spaced at irregular intervals from 75cm to 3 meters (2.5 to 10 ft.) or 1-4 paces.

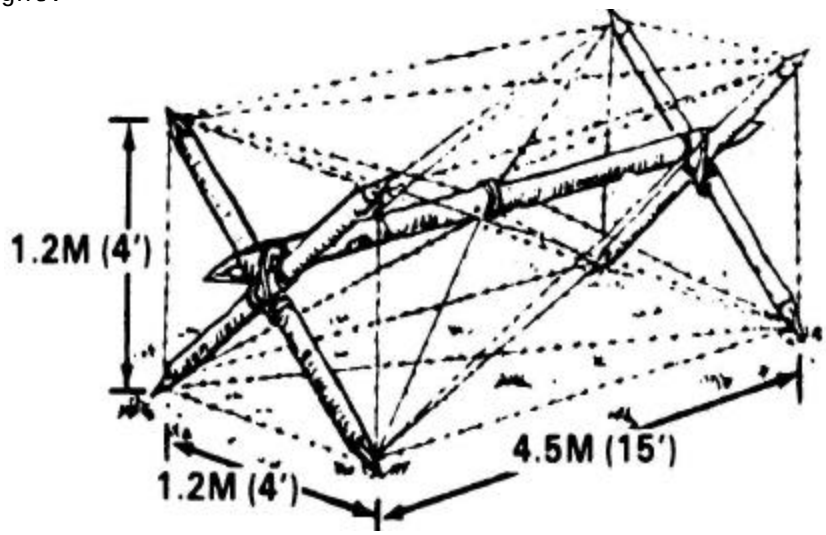
c. The height of barbed wire should vary between 23 to 75 cm (9 to 30 in.).



10. KNIFE REST: A knife rest is used wherever a readily removable barrier is needed; for example, at lanes and gaps in wire obstacles or at roadblocks.

a. Knife rests can be constructed out of wood or metal and consist of two cross members and one horizontal member. The entire structure is strung with barbed wire.

b. Knife rests should be 4.5 meters (15ft)in length and 1.2 meters (4ft)in width and height.

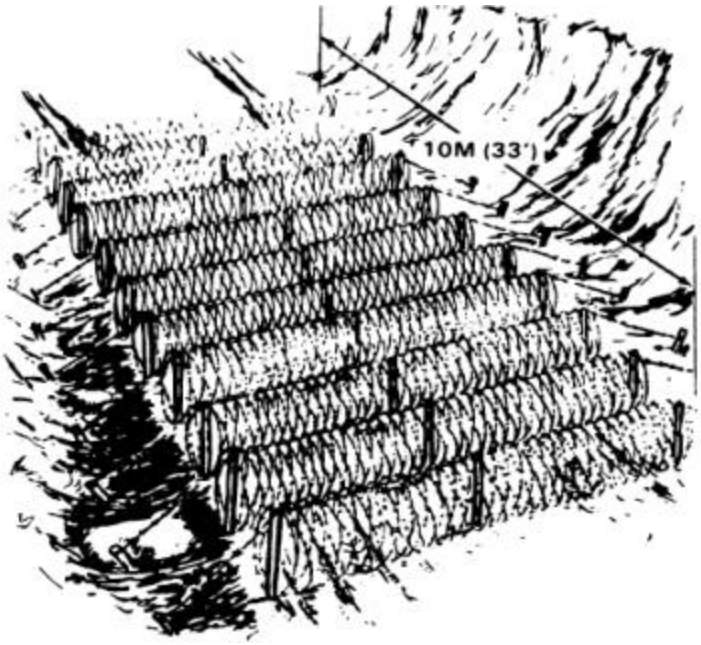


11. CONCERTINA ROADBLOCK: A series of concertinas will stop wheeled vehicles when employed with a minimum depth of 10m (33ft). When employed in greater depth it can stop tracked vehicles.

a. Construction.

(1) Place three long u-shaped pickets 5 paces apart per coil. The pickets should be lightly anchored.

(2) Place and tie a horizontal wire on top of each individual coil. The horizontal wire will be tied to each individual long picket and secured and each end by an anchor picket.



REFERENCES

FM 5-102	Countermobility
FM 5-34/MCRP 3-17A	Engineer Field Data